

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* KEIJI ONO and SUSUMU MIYAZAKI

---

Appeal 2007-0129  
Application 09/810,225  
Technology Center 1700

---

Decided: January 31, 2007

---

Before PETER F. KRATZ, JEFFREY T. SMITH, and  
LINDA M. GAUDETTE, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1, 3, 4 and 15. Claims 6-14, which are the only other claims pending in this application, stand withdrawn from further consideration by the Examiner as drawn to a non-elected invention. We have jurisdiction pursuant to 35 U.S.C. § 134. An oral hearing was held on January 11, 2007.

Appellants' invention is drawn to a method wherein ultraviolet ray – excitable aluminate phosphor compounds are mixed with a coupling agent comprising an aluminum compound. The resultant product of the mixing

step is calcined. The excited aluminate phosphors emit light. Appellants maintain that the light emission properties of the phosphors are prolonged by the coupling agent treatment (Specification 3). Claims 1 and 15 are illustrative of the subject matter on appeal and are reproduced below:

1. A process for producing a vacuum ultraviolet ray-excited light-emitting phosphor comprising the steps of

mixing an aluminate phosphor compound with a coupling agent comprising an aluminum compound, and calcining the mixture, wherein the coupling agent contains a 1, 3-diketone structure.

15. A process for producing a vacuum ultraviolet ray-excited light-emitting phosphor comprising the steps of

mixing an aluminate phosphor compound with a coupling agent comprising an aluminum compound, and calcining the mixture.

The Examiner relies on the following prior art references:

Sigai	US 4,825,124	Apr. 25, 1989
Kasenga	US 4,946,707	Aug. 7, 1990
Mizuta	US 5,039,654	Aug. 13, 1991
Bechtel	US 5,998,047	Dec. 7, 1999

Claims 1, 3, and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sigai in view of Bechtel. Claims 1, 3, 4, and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kasenga in view of Mizuta and Bechtel.

The Examiner acknowledges that each of Sigai, Kasenga, and Mizuta do not disclose coating aluminate phosphors. Rather, Bechtel is applied in each of the Examiner's rejections for disclosing aluminate phosphors. However, Bechtel treats aluminate phosphors with anhydrous catenapolyphosphates to form a hard, water-insoluble coating thereon. The coating

is not subject to degradation when the coated phosphor is exposed to UV rays, such as when the phosphors are employed in a phosphor screen of a working plasma display device. *See Bechtel* at col. 1, ll. 34-61.

In each of the stated rejections, the Examiner contends Bechtel teaches that aluminate phosphors benefit from protective coatings that increase their operative lifetimes. Based on that common contention made in each of the separate rejections, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to coat aluminate phosphors with an aluminum compound-containing coupling agent as allegedly disclosed by Sigai (first rejection) or as allegedly suggested by the combined teachings of Kasenga and Mizuta.

Appellants contend that the Examiner has not discharged the burden of establishing the prima facie obviousness of the claimed subject matter. More particularly, Appellants maintain that the Examiner has not furnished a reasonable suggestion or motivation that would have led one of ordinary skill in the art to combine Bechtel with the other applied references in the manner proposed in the separately stated rejections so as to arrive at the here claimed subject matter.

For each of the stated rejections, a principal issue raised in this appeal is whether the Examiner has discharged the burden of establishing that it would have been prima facie obvious to one of ordinary skill in the art to treat aluminate phosphors with a coupling agent comprising an aluminum compound based on the combined teachings of the applied references.

We answer that question in the negative, and we will not sustain the Examiner's rejections on this record for reasons stated in Appellants' Briefs and as further discussed below.

Under 35 U.S.C. § 103(a), the Examiner carries the initial burden of establishing a prima facie case of obviousness. *In re Piasecki*, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). As part of meeting this initial burden, the Examiner must determine whether the differences between the subject matter of the claims and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art”, 35 U.S.C. § 103(a)(1999); *Graham v. John Deere Co.*, 383 U.S. 1, 14, 148 USPQ 459, 465 (1966). The applied prior art references as a whole must be viewed from the perspective of one of ordinary skill in the art to determine whether “some suggestion” is present to arrive at the claimed subject matter. *Cf. In re Mills*, 470 F.2d 649, 651, 176 USPQ 196, 198 (CCPA 1972).

All of the rejected claims require a process wherein an aluminate phosphor is mixed with a coupling agent that includes an aluminum compound, and then calcined.

Sigai forms an aluminum oxide coating on a phosphor particle to extend the lumen maintenance of a fluorescent lamp. Sigai theorizes that the principal cause of light output reduction with time in a fluorescent lamp is due to mercury exposure and the formation of mercury compounds on the surface of phosphor layers in such devices. Sigai at col. 1, ll. 15-48. The Examiner acknowledges that Sigai does not disclose coating aluminate phosphors.

As noted above, Bechtel is specifically directed to coating aluminate phosphors particles with one or more catena-polyphosphates. Bechtel teaches that the coated phosphors are useful in plasma display devices (PDD), as the coating does not degenerate upon UV exposure encountered in

such an application. This leads to a prolongation of the efficiency of the phosphors in PDD applications according to Bechtel.

The Examiner has not fairly explained why one of ordinary skill in the art would seek to modify the specific aluminate phosphor coating method of Bechtel that is designed to prolong phosphor performance in a PDD application based on the teachings of Sigai, which latter reference does not mention aluminate phosphors or a PDD application for the coated phosphors thereof. Nor has the Examiner established a particularized suggestion for employing uncoated aluminate phosphors, as disclosed in Bechtel, as the phosphors to be treated by the method of Sigai for the fluorescent tube application described in Sigai. While Sigai discloses that any material brought to fluorescence by UV radiation may be used as a lamp phosphor, Sigai teaches that the subject coating process thereof is applicable to lamp phosphors of class "C" of the Geldhart Classification Scale. *See* col. 3, ll. 34-39 and col. 4, ll. 3-7 of Sigai. Here, the Examiner has not furnished any particularized evidence to show that aluminate phosphors of the type disclosed by Bechtel would have been known to be a Geldhart class "C" phosphor or otherwise be particularly suitable for use in a fluorescent lamp after coating using an aluminum precursor, such as disclosed by Sigai. We conclude that the Examiner has not established a prima facie case of obviousness for the claimed subject matter based on the combined teachings of Sigai and Bechtel.

Similarly, the Examiner has not established why one of ordinary skill would have been led to modify the specific manganese-doped zinc silicate phosphor that is the subject of the coating method of Kasenga, which phosphors are used in fluorescent lamps, by substituting an aluminate

phosphor as the phosphor to be coated in Kasenga based on the disparate polyphosphate coating of aluminate phosphors described in Bechtel. This is especially so given the different utility, a PDD application, to which Bechtel's coated phosphor is directed. Nor has the Examiner fairly explained how Mizuta, which patent is directed to superconductive materials and methods of preparing such superconductors, fairly suggests a modification of Kasenga that would have led one of ordinary skill in the art to the here-claimed subject matter.

From our perspective, both of the Examiner's rejections appear to be premised on impermissible hindsight reasoning. On the record of this appeal, it is our view that the Examiner has not carried the burden of establishing a prima facie case of obviousness with respect to the subject matter defined by the appealed claims.

Accordingly, we will not sustain the Examiner's § 103(a) rejections on this record.

Appeal 2007-0129  
Application 09/810,225

ORDER

The Examiner's decision to reject the appealed claims based on the evidence relied upon is reversed.

REVERSED

tf/hh

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
WASHINGTON, DC 20037-3213